



X-Plain™

Lyme Disease

Reference Summary

Lyme disease is a growing infectious disease in the United States. Lyme disease is spread by a deer tick.

If not treated, Lyme disease is a potentially serious disease that can lead to disabling arthritis and neurological problems.

This reference summary will help you understand Lyme disease and how it can be treated.

What Is Lyme Disease?

In the early 1970s, several children in Lyme, Connecticut, and in surrounding areas, developed arthritis. Doctors soon found out that the arthritis was caused by an infectious disease, which they called Lyme disease.



Lyme disease is caused by bacteria called *Borrelia burgdorferi*.

About 1% of all deer ticks are infected with the bacteria. These ticks are called deer ticks because they usually feed and mate on deer.

When a deer tick bites a person, the bacteria can transfer to the person's blood. The tick must stay attached to the person's skin for 2 days for infection to occur.

A person bitten by an infected deer tick develops a rash called erythema migrans or EM rash. It is usually the first symptom. The rash starts as a small red spot at the site of the tick bite. The spot expands over a period of days or weeks, forming a circle or oval shaped rash.

Over time, the bacteria travel through the blood stream and lymph nodes. They produce toxins, harmful substances that divide and multiply. Lyme disease is not contagious.

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Symptoms

An EM rash is similar to a target; it looks like a red ring around a clear area with a red center. The rash can range from the size of a dime to the width of a person's back. Appearing within a few weeks, the infection spreads and the rash may appear in different places on the body.

An EM rash is often accompanied by the following symptoms:

- fever
- headache
- stiff neck
- body aches
- fatigue



Although Lyme disease symptoms are flu-like, they usually do not go away like the common flu. They may also occur off and on continually.

Arthritis usually shows up after several months of infection. More than 1/2 of Lyme disease patients who do not get antibiotic treatment have repeated attacks of painful, swollen joints.

The arthritis may shift from one joint to another, however, the knee is most commonly affected. About 10 - 20% of untreated Lyme disease patients develop chronic arthritis, which lasts a lifetime.

Lyme disease can also affect the nervous system, causing

- stiff neck
- severe headache (meningitis)
- temporary paralysis of facial muscles (Bell's palsy)
- numbness, pain, or weakness in the limbs

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- poor motor coordination

Other symptoms such as memory loss, difficulty concentrating, and change in mood or sleeping habits are also associated with Lyme disease.

Problems with the nervous system may develop several weeks, months, or even years, after an untreated infection. These symptoms last for weeks or months and may recur.

Less than 10% of Lyme disease patients develop heart problems. Symptoms include irregular heartbeat, dizziness, and shortness of breath. These symptoms usually show up a few weeks after infection and only last a few days or weeks.

Lyme disease can result in symptoms such as eye inflammation, hepatitis (liver infection), and severe fatigue. None of these problems is likely to appear without one or more other Lyme disease symptoms.

Diagnosis

The most obvious symptom of Lyme disease is EM rash. However, about 25% of people who get infected do NOT develop an EM rash. Without an EM rash, Lyme disease can be difficult to diagnose since many of the symptoms are also the symptoms of other diseases.

Many Lyme disease patients cannot remember being bitten by a tick. This is not surprising, since the tick is tiny and its bite is usually painless.

To diagnose Lyme disease, the doctor asks the patient questions about recent activities and unusual signs he or she may have noticed. This process is called taking a medical history.

When a patient with possible Lyme disease symptoms does not develop an EM rash, the doctor needs a blood test to check for Lyme disease.

The doctor may request a spinal tap for patients who have nervous system symptoms. During a spinal tap, fluid is withdrawn from around the brain and spinal cord. The fluid is tested for Lyme antibodies.

Treatment

Most Lyme disease patients can be successfully treated with antibiotics. In general, the sooner such treatment is given, the quicker and more complete the recovery is.

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Taking antibiotics by mouth for a few weeks can speed up healing of the EM rash and usually prevents symptoms such as arthritis or neurological problems.

With more advanced or serious infection, antibiotics administered directly into the blood through an intravenous line may be needed.

Along with antibiotics, Lyme arthritis may also be treated with anti-inflammatory drugs. Fluid can be drawn from affected joints. The lining of inflamed joints may also be removed surgically.

Sometimes it takes years for Lyme arthritis to fade away completely, but it usually goes away within a few weeks or months of antibiotic therapy.

Unfortunately, being infected with Lyme disease once does not guarantee that it will never happen again. Lyme disease can affect the same person more than once if he or she is re-infected with the Lyme disease bacterium.

Prevention

You can do several things to avoid being exposed to deer ticks.

Avoid tick-infested areas, especially in May, June, and July.

Wear long-sleeved shirts, socks, and closed shoes when outdoors.

Tuck pant legs into socks or boots and tuck loose shirts or jackets into pants.

Wear light-colored clothing so that ticks can be spotted easily. If you see one, flick it off!

Apply insect repellent containing Permethrin to pants, socks, and shoes, and apply compounds containing DEET to exposed skin. Do not overuse these products.

Walk in the center of trails to avoid overgrown grass and brush.

After being outdoors in a tick-infested area, remove, wash, and dry all clothing.

Be sure to inspect your body thoroughly, and carefully remove any attached ticks. To remove ticks attached to the skin, first pull them out gently with tweezers, taking care not to squeeze the tick's body. Then, apply an antiseptic to the bite site.



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Pets should also be checked for ticks. A pet can also develop Lyme disease. Pets can carry ticks into the house. These ticks could fall off the animal and attach themselves to people inside the house, infecting them with their bite.

Summary

Lyme disease is an infectious disease, caused by a deer tick, that can lead to serious arthritis and other neurological problems.

Most people with Lyme disease develop a red rash after being bitten by an infected deer tick. Only 1% of deer ticks are infected with Lyme bacteria. In some areas of the United States that percentage can be as high as 50%.

Fortunately, recent medical advances have improved the diagnosis and treatment of Lyme disease. Early antibiotic treatment works very well at controlling this bacterial infection.

There are several measures people can take to prevent being bitten by infected deer ticks while enjoying the great American outdoors!